Extreme Networks EAS 200-24p Switch Hardware Installation Manual

Layer 2 Managed PoE Ethernet Switch

Release 1.00

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Published: July 2011
Part number: 120704-00 Rev. 01

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Preface

Intended Readers

The *EAS 200-24p Hardware Manual* contains information for set up and management of the switch. This manual is intended for network managers familiar with network management concepts and terminology. For all practical reasons the EAS 200-24p will be simply referred to as the switch throughout this manual.

Typographical Conventions

Convention	Description
[ ]	In a command line, square brackets indicate an optional entry.
	For example: [copy filename] means that optionally you can type copy followed by the name of the file. Do not type the brackets.
Bold font	Indicates a button, a toolbar icon, menu, or menu item.
	For example: Click on the **Apply** button. Used for emphasis. May also indicate system messages or prompts appearing on screen. For example: **You have mail**. **Bold** font is also used to represent filenames, program names and commands. For example: **use the copy command**.
`Boldface Typewriter Font`	Indicates commands and responses to prompts that must be typed exactly as printed in the manual.
Initial capital letter	Indicates a window name. Names of keys on the keyboard have initial capitals.
	For example: Click Enter.
Menu Name > Menu Option	**Menu Name > Menu Option** Indicates the menu structure.
	Device > Port > Port Properties means the Port Properties menu option under the Port menu option that is located under the Device menu.

Notes, Cautions, and Warnings

NOTE

A NOTE indicates important information that helps make better use of the device.

CAUTION

A CAUTION indicates either potential damage to hardware or loss of data and tells how to avoid the problem.

WARNING!

A WARNING indicates a potential for property damage, personal injury, or death.

Safety Instructions

Use the following safety guidelines to ensure your own personal safety and to help protect your system from potential damage. Throughout this safety section, the caution icon (⚠) is used to indicate cautions and precautions that need to be reviewed and followed.

Safety Cautions

To reduce the risk of injury, electrical shock, fire, and damage to the equipment observe the following precautions:

- Observe and follow service markings.
  - Do not service any product except as explained in the system documentation.
  - Opening or removing covers that are marked with the triangular symbol with a lightning bolt may expose the user to electrical shock.
  - Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
  - Damage to the power cable, extension cable, or plug.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when the operating instructions are correctly followed.
- Keep your system away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on system components, and never operate the product in a wet environment.

- Do not push any objects into the openings of the system. Doing so can cause fire or electric shock by shorting out interior components.
- Use the product only with approved equipment.
- Allow the product to cool before removing covers or touching internal components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If unsure of the type of power source required, consult your service provider or local power company.
- To help avoid damaging the system, be sure the voltage selection switch (if provided) on the power supply is set to match the power available where the switch is located:
  - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
  - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan
  - 230 V/50 Hz in most of Europe, the Middle East, and the Far East
- Also, be sure that attached devices are electrically rated to operate with the power available in your location.
- Use only approved power cable(s). If you have not been provided with a power cable for your system or for any AC-powered option intended for your system, purchase a power cable that is approved for use in your country. The power cable must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cable should be greater than the ratings marked on the product.
- To help prevent electric shock, plug the system and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If using an extension cable is necessary, use a 3-wire cable with properly grounded plugs.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- To help protect the system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Position system cables and power cables carefully; route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or plugs. Consult a licensed electrician or your power company for site modifications. Always follow your local/national wiring rules.
- When connecting or disconnecting power to hot-pluggable power supplies, if offered with your system, observe the following guidelines:
  - Install the power supply before connecting the power cable to the power supply.
  - Unplug the power cable before removing the power supply.
  - If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies.
  - Move products with care; ensure that all casters and/or stabilizers are firmly connected to the system. Avoid sudden stops and uneven surfaces.

General Precautions for Rack-Mountable Products

Observe the following precautions for rack stability and safety. Also, refer to the rack installation documentation accompanying the system and the rack for specific caution statements and procedures.

Systems are considered to be components in a rack. Thus, "component" refers to any system as well as to various peripherals or supporting hardware.

WARNING!

Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack. After installing system/components in a rack, never pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in serious injury.

- Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- Always load the rack from the bottom up, and load the heaviest item in the rack first.
- Make sure that the rack is level and stable before extending a component from the rack.
- Use caution when pressing the component rail release latches and sliding a component into or out of a rack; the slide rails can pinch your fingers.
- After a component is inserted into the rack, carefully extend the rail into a locking position, and then slide the component into the rack.
- Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- Ensure that proper airflow is provided to components in the rack.
- Do not step on or stand on any component when servicing other components in a rack.

NOTE

A qualified electrician must perform all connections to DC power and to safety grounds. All electrical wiring must comply with applicable local, regional or national codes and practices.

WARNING!

Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if uncertain that suitable grounding is available.

WARNING!

The system chassis must be positively grounded to the rack cabinet frame. Do not attempt to connect power to the system until grounding cables are connected. Completed power and safety ground wiring must be

inspected by a qualified electrical inspector. An energy hazard will exist if the safety ground cable is omitted or disconnected.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside the system. To prevent static damage, discharge static electricity from your body before touching any of the electronic components, such as the microprocessor. This can be done by periodically touching an unpainted metal surface on the chassis.

The following steps can also be taken prevent damage from electrostatic discharge (ESD):

1. When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until ready to install the component in the system. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.
2. When transporting a sensitive component, first place it in an antistatic container or packaging.
3. Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads, workbench pads and an antistatic grounding strap.

1 Introduction

CHAPTER

Switch Description

The switch features the following specifications:

- EAS 200-24p**:** 20-Port 10/100/1000Base-T with 4 Combo Copper/SFP PoE ports, L2 management switch.

This cost effective Gigabit switch provides an affordable solution for administrators to upgrade their networks to high speed Gigabit connections. The advanced ACL and user authentication functions on the switch extend the network security coverage from core to the edge.

The switch has a combination of 10/100/1000BASE-T(X) ports and SFP ports that may be used in uplinking various network devices to the switch, including PCs, hubs and other switches to provide a gigabit Ethernet uplink in full-duplex mode. The SFP (Small Form Factor Portable) combo ports are used with fiber-optical transceiver cabling in order to uplink various other networking devices for a gigabit link that may span great distances.

These SFP ports support full-duplex transmissions and can be used with the following transceivers:

- 10051 - SX mini-GBIC (Mini-GBIC SFP, 1000BASE-SX, MMF 220 & 550 meters, LC connector)
- 10052 - LX mini-GBIC (Mini-GBIC SFP, 1000BASE-LX, MMF 220 & 550 meters, SMF 10km, LC connector)
- 10053 - ZX mini-GBIC (Mini-GBIC SFP, 1000BASE-ZX, SMF 70km, LC connector)
- 10056 - 1000BASE-BX-D BiDi SFP (1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength)
- 10057 - 1000BASE-BX-U BiDi SFP (1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength)

Features

The list below highlights the significant protocols and features supported by the switch.

- IEEE 802.3
- IEEE 802.3z
- IEEE 802.3x Flow Control in full-duplex compliant
- IEEE 802.3u
- IEEE 802.3ab

- IEEE 802.1p Priority Queues
- IEEE 802.3ad Link Aggregation Control Protocol for up to 32 groups per device, eight ports per group
- IEEE 802.1X Port-based and Host-based Access Control
- IEEE 802.1Q VLAN
- IEEE 802.1D Spanning Tree, IEEE 802.1w Rapid Spanning Tree and IEEE 802.1s Multiple Spanning Tree support
- Jumbo frame to 13K Bytes
- Access Control List: Ingress ACL up to 6 profiles and 256 rules and Egress ACL up to 4 profiles and 128 rules
- Single IP Management
- Access Authentication Control utilizing TACACS, XTACACS, TACACS+, and RADIUS protocols
- Power saving mode
- Simple Network Time Protocol (SNTP)
- System Log
- Maximum packet forwarding rate 65.48 million packets per second
- High performance switching engine performs forwarding and filtering at full wire speed up to 48Gps
- Full- and half-duplex for all ports. Full duplex allows the switch port to simultaneously transmit and receive data. It only works with connections to full-duplex-capable end stations and switches. Connections to a hub must take place at half-duplex.
- Unicast, broadcast, and multicast storm control
- Loopback Detection (LBD) v4.0 Trap
- Efficient self-learning and address recognition mechanism enables forwarding rate at wire speed
- Address table: up to 16 K
- Packet buffer memory of up to 2 MByte
- VLAN Trunking
- Private VLAN
- Maximum of 4K VLAN groups
- 802.1Q (2005 edition)
- GVRP for 4K VLAN (255 dynamic) groups
- Voice VLAN by MAC address
- VLAN tagging based on PVID
- Up to 1024 MAC-based VLAN entries
- IGMP Snooping v1/v2 (IGMPv3 Awareness)
- MLD Snooping v1 (MLDv2 Awareness)
- Up to 1024 IGMP/MLD snooping groups
- SNMP v1/v2/v3
- SNMP over IPv6
- Secure Sockets Layer (SSL) v1/v2/v3
- Secure Shell (SSH) v2
- Port Mirroring

- LLDP
- NLB
- Traffic segmentation
- Web-based Access Control (WAC)
- MAC-based Access Control (MAC)
- Guest VLAN
- Database Failover
- RADIUS accounting
- RADIUS authentication for management access
- TACACS+ authentication for management access
- User account privilege for management access—four levels of user accounts
- DHCP server screening
- MIB support for:
  - RFC 1213 MIB II
  - RFC 4188 Bridge MIB
  - RFC 1907 SNMPv2 MIB
  - RFC 2819 RMON MIB
  - RFC 2021 RMONv2 MIB
  - RFC 2571 SNMP MIB, RFC 2572 SNMP MIB, RFC 2573 SNMP MIB
  - RFC 2574 SNMPv3 MIB
  - RFC 2575 VACM for SNMP MIB
  - RFC 2576 SNMPv1, v2 & v3 MIB
  - RFC 2665 Ether-like MIB
  - RFC 4363 P-Bridge MIB and Q-Bridge MIB
  - RFC 2863 IF MIB
  - RFC 2618 RADIUS Authentication Client MIB
  - RFC 2620 RADIUS Accounting Client MIB
  - RFC 2925 Ping and Traceroute MIB
  - Private MIB
  - RFC 4293 IPv6 MIB
  - RFC 4022 TCP MIB
  - LLDP MIB
  - LLDP-DOT1-MIB, LLDP-DOT3-MIB
- Provides parallel LED display for port status such as link/act, speed, etc.
- Web-based GUI compatible with most major browsers, including Internet Explorer (version 5.5 and later), Netscape (version 8.0 and later), Mozilla Firefox (version 2.0 and later), and Safari (version 4.0 and later).

Ports

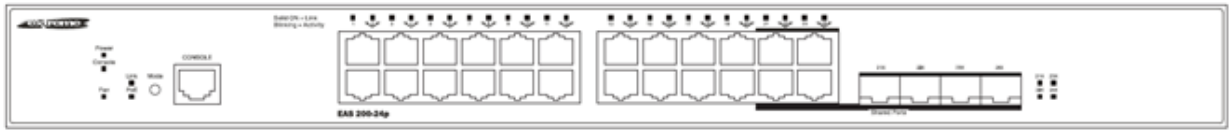
The switch features the following port specifications:

- EAS 200-24p: 20-Port 10/100/1000Base-T with 4 Combo Copper/SFP PoE ports, L2 management switch.
- All the switches are equipped with one RJ-45 Console port (a special console cable with a DB9 interface is provided to connect the switch to a PC).

Front Panel Components

The front panel of the switch consists of LED indicators for Power, Console, Fan, and for Link/Act for each port on the switch including SFP port LEDs.

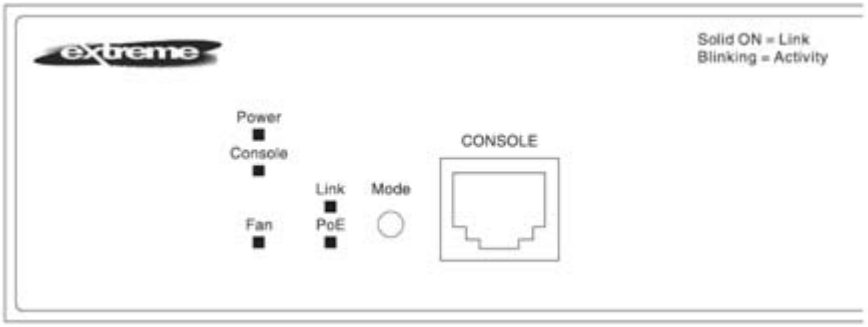
Figure 1: Front Panel View of the EAS 200-24p



LED Indicators

The switch front panel presents LED indicators for Power, Console, Fan, and Link/Act indicators for all ports including the Gigabit Ethernet ports. The switch is equipped with an additional PoE light, to indication whether the ports are running in Power over Ethernet mode.

Figure 2: LED Indicators for the EAS 200-24p



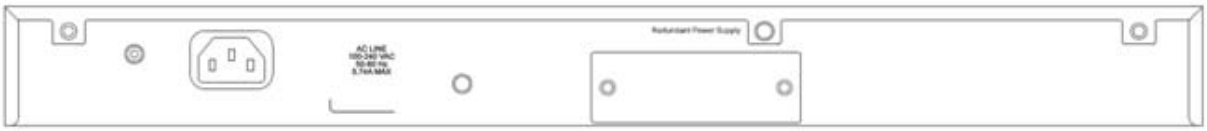
LED	Description
Power	This LED will light green after powering the switch on to indicate the ready state of the device. The indicator is dark when the switch is no longer receiving power (i.e. powered off).
Console	This LED will blink green during the Power-On Self Test (POST). When the POST is finished, the LED goes dark. The indicator will light steady green when a user is logged in through the console port.
Fan	This LED blinks red when a fan fails. No light indicates all fans are working normally.

Link/Act LEDs	The switch has LED indicators for Link and Activity. The LED will light steady green when there is a secure connection (or link) to a 1000Mbps Ethernet device at any of the ports, or steady orange when there is a secure connection (or link) to a 10/100Mbps Ethernet device at any of the ports. The LED will blink green when a 1000Mbps port is active, or blink orange when a 10/100Mbps port is active. The LED remains dark when there is no link or activity.
PoE	The switch is equipped with a PoE LED. When this light is on with a solid green light, it means that the corresponding ports are feeding power to the PoE devices plugged in. When this light is on with a solid orange light, it means that the port is in an error condition state. When this light is off, it means that the ports are not supplying power to the devices plugged into the ports.

Rear Panel Description

The rear panel contains an AC power connector. The AC power connector is a standard three-pronged connector that supports the power cord.

Figure 3: Rear Panel View of the EAS 200-24p

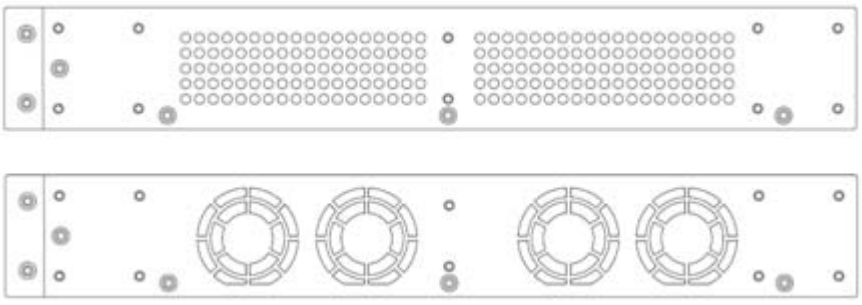


Plug-in the female connector of the provided power cord into this socket, and the male side of the cord into a power outlet. The switch automatically adjusts the power setting to any supply voltage in the range from 100~240VAC at 50~60Hz. The other port is available for future modification.

Side Panel Description

The system heat vents located on each side dissipate heat. Do not block these openings. Leave at least 6 inches of space at the rear and sides of the switch for proper ventilation. Be reminded that without proper heat dissipation and air circulation, system components might overheat, which could lead to system failure or even severely damage components.

Figure 4: Identical Side Panels of the EAS 200-24p



2 Installation

CHAPTER

Package Contents

Open the shipping carton of the switch and carefully unpack its contents. The carton should contain the following items:

- One EAS 200-24p switch
- One RJ-45 to RS-232 console
- One mounting kit (two brackets and screws)
- Four rubber feet with adhesive backing

If any item is missing or damaged, please contact your local reseller for a replacement.

Installation Guidelines

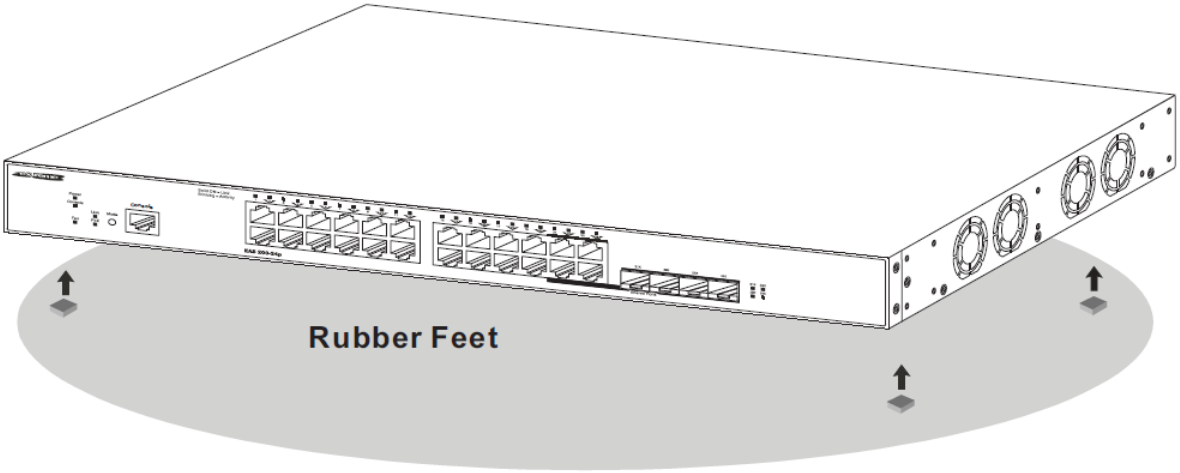
Please follow these guidelines for setting up the switch:

- Install the switch on a sturdy, level surface that can support the weight of the switch. Do not place heavy objects on the switch.
- The power outlet should be within 1.82 meters (6 feet) of the switch.
- Visually inspect the power cord and see that it is fully secured to the AC power port.
- Make sure that there is proper heat dissipation from and adequate ventilation around the switch. Leave at least 10 cm (4 inches) of space at the front and rear of the switch for ventilation.
- Install the switch in a fairly cool and dry place for the acceptable temperature and humidity operating ranges.
- Install the switch in a site free from strong electromagnetic field generators (such as motors), vibration, dust, and direct exposure to sunlight.
- When installing the switch on a level surface, attach the rubber feet to the bottom of the device. The rubber feet cushion the switch, protect the casing from scratches and prevent it from scratching other surfaces.

Installing the Switch without a Rack

First, attach the rubber feet included with the switch if installing on a desktop or shelf. Attach these cushioning feet on the bottom at each corner of the device. Allow enough ventilation space between the switch and any other objects in the vicinity.

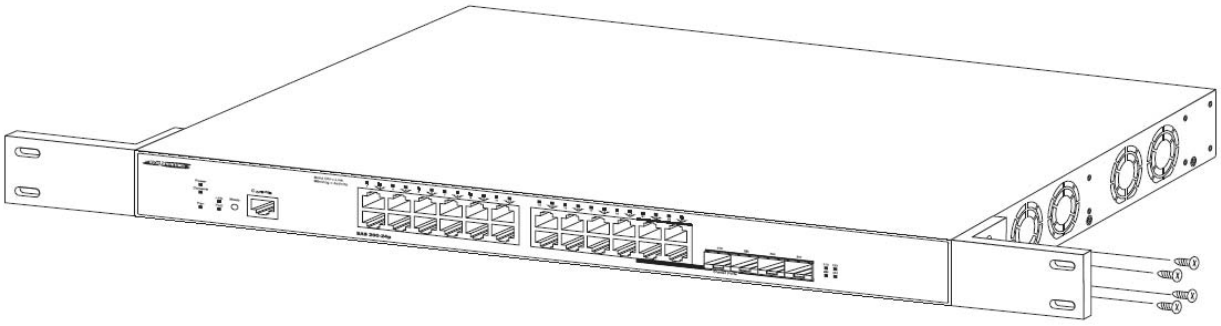
Figure 5: Prepare the Switch for Installation on a Desktop or Shelf



Attaching Brackets to a Switch for Rack Mounting

The switch can be mounted in a standard 19" rack using the provided mounting brackets. Use the following diagrams as a guide.

Figure 6: Fasten Mounting Brackets on the Switch



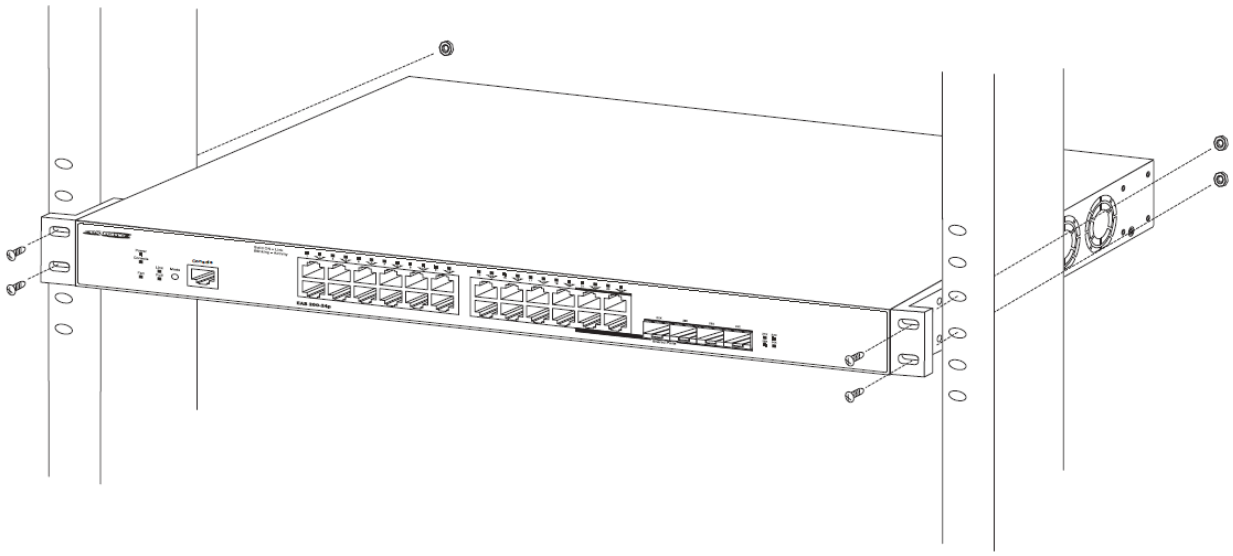
Fasten the mounting brackets to the switch using the screws provided. With the brackets attached securely, the switch can be mounted in a standard rack, as shown below.

NOTE

Please review the Installation Guidelines above before installing the switch in a rack. Make sure there is adequate space around the switch to allow for proper air flow, ventilation, and cooling.

Mounting the Switch in a Standard 19" Rack

Figure 7: Installing the Switch in a Rack



Power On (AC Power)

1 Plug one end of the AC power cord into the power connector of the switch and the other end into the local power source outlet.

2 After powering on the switch, the LED indicators will momentarily blink green. This blinking of the LED indicators represents a reset of the system.

Power Failure (AC Power)

For AC power supply units, as a precaution, in the event of a power failure, unplug the switch. When power has resumed, plug the switch back in.

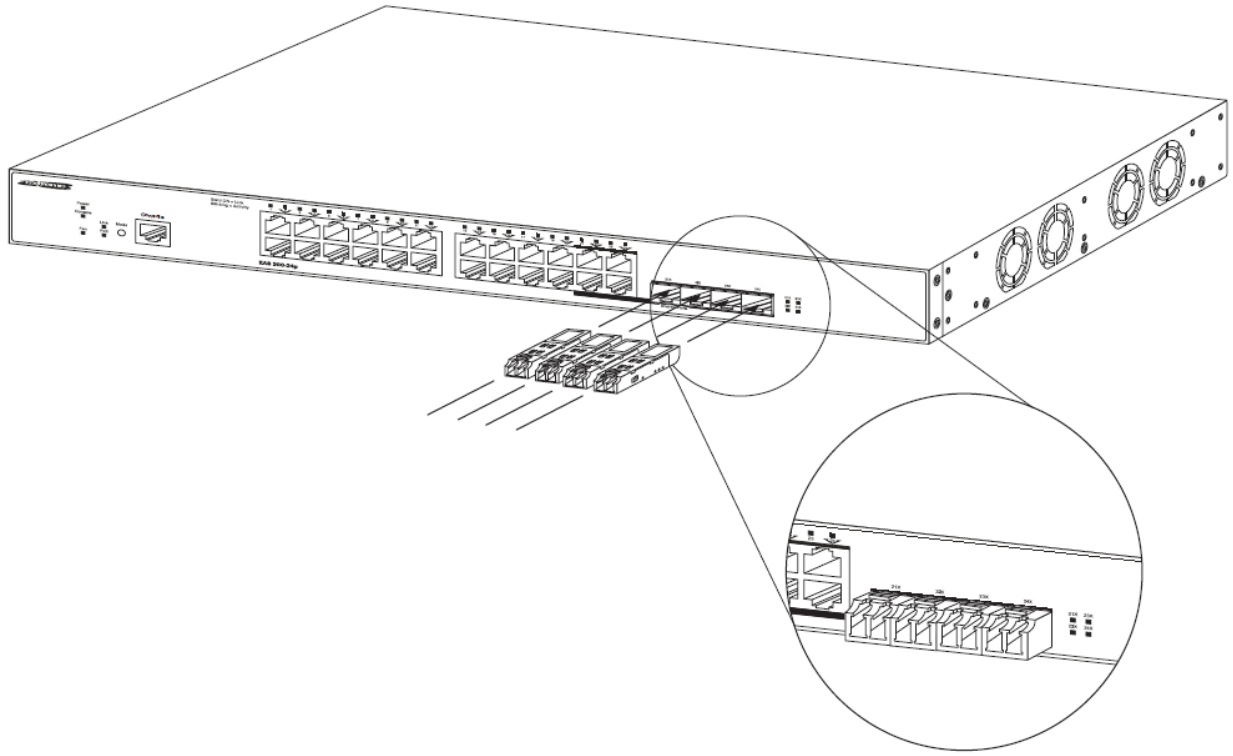
WARNING!

Installing systems in a rack without the front and side stabilizers installed could cause the rack to tip over, potentially resulting in bodily injury under certain circumstances. Therefore, always install the stabilizers before installing components in the rack. After installing components in a rack, do not pull more than one component out of the rack on its slide assemblies at one time. The weight of more than one extended component could cause the rack to tip over and may result in injury.

Installing SFP Ports

The switch is equipped with SFP (Small Form Factor Portable) ports, which are to be used with fiber-optical transceiver cabling in order to uplink various other networking devices for a Gigabit link that may span great distances.

Figure 8: Inserting Fiber-Optic Transceivers Into the Switch



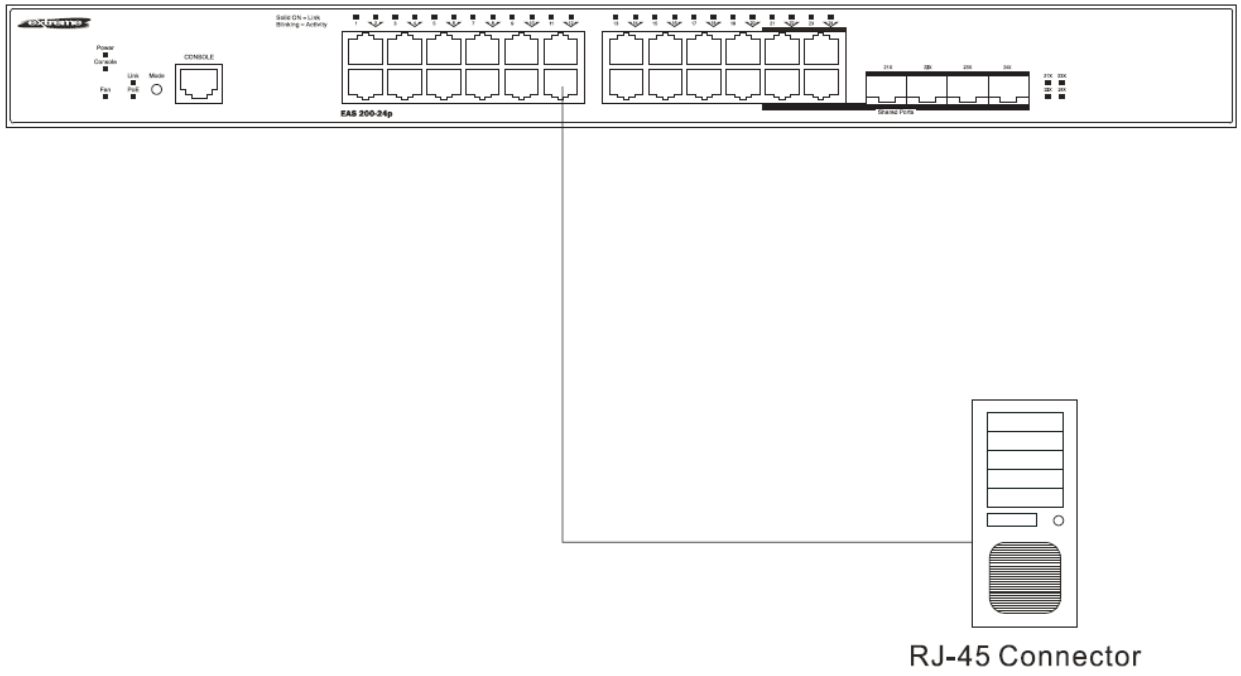
3 Connecting the Switch

CHAPTER

Switch to End Node

End nodes include PCs outfitted with a 10, 100 or 1000 Mbps RJ-45 Ethernet Network Interface Card (NIC) and routers. An end node connects to the switch via a twisted-pair UTP/STP cable. Connect the end node to any of the ports of the switch. The Link/Act LEDs for each Ethernet port will light green or amber when the link is valid. A blinking LED indicates packet activity on that port.

Figure 9: Connecting the Switch to an End Node

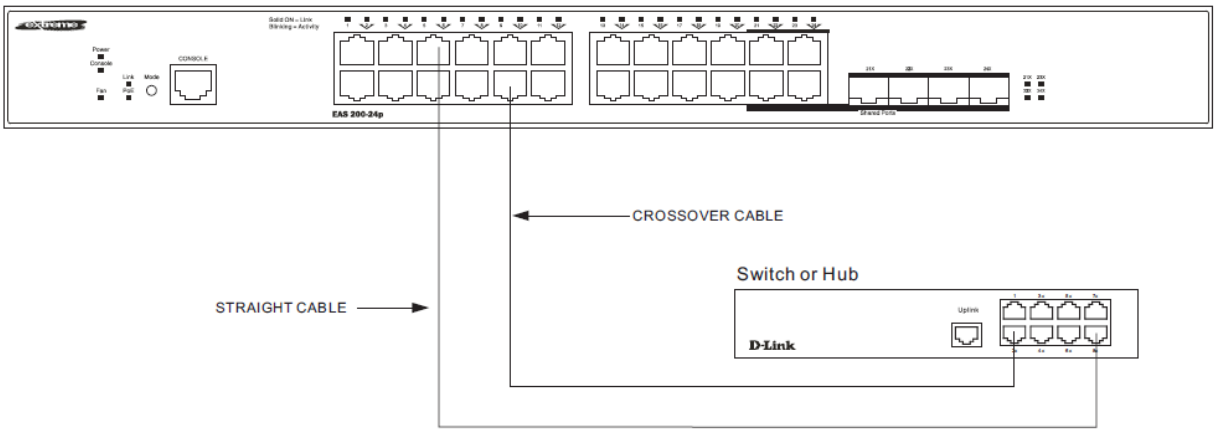


Switch to Switch

There is a great deal of flexibility on how connections are made using the appropriate cabling.

- Connect a 10BASE-T switch port to the switch via a twisted-pair Category 3, 4 or 5 UTP/STP cable.
- Connect a 100BASE-TX switch port to the switch via a twisted-pair Category 5 UTP/STP cable.
- Connect a 1000BASE-T switch port to the switch via a twisted pair Category 5e UTP/STP cable.
- Connect a switch supporting a fiber-optic uplink to the SFP ports via fiber-optic cabling.

Figure 10: Connecting a Switch to Another Switch

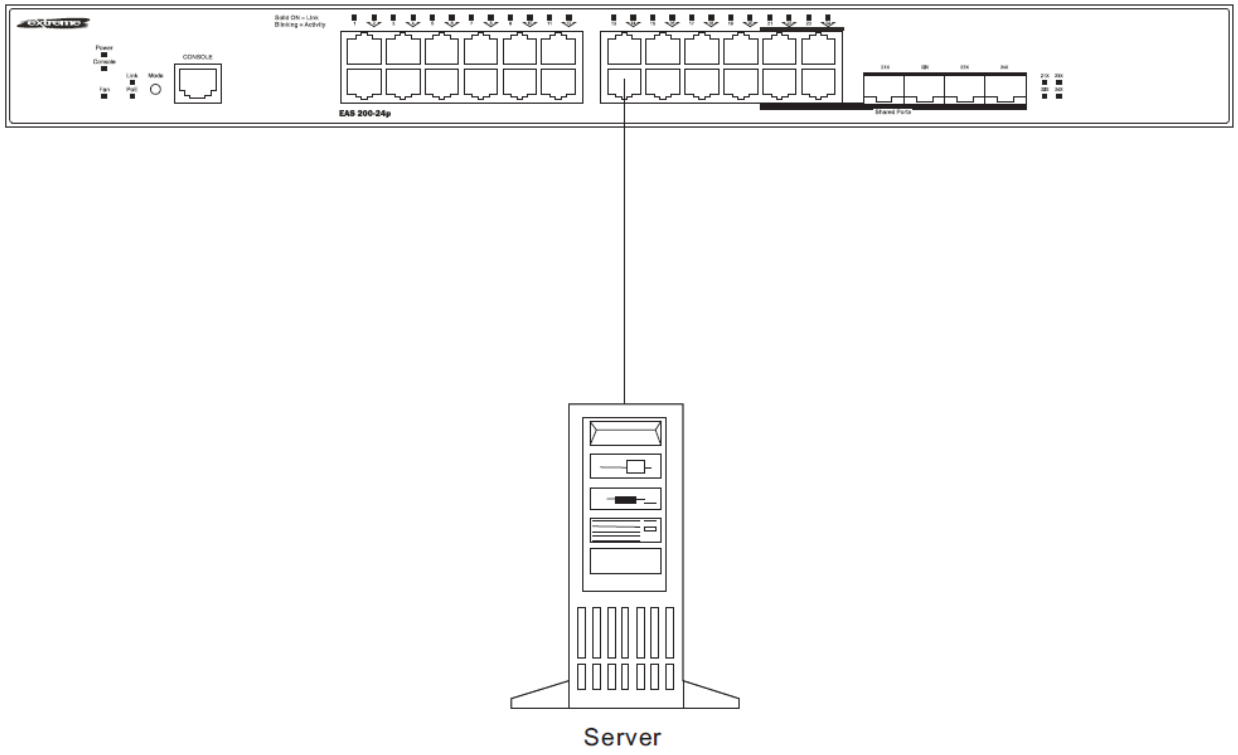


Connecting to Network Backbone or Server

The combo SFP ports and the 1000BASE-T ports are ideal for uplinking to a network backbone, server or server farm. The copper ports operate at a speed of 10/100/1000Mbps in full or half duplex mode. The fiber-optic ports can operate at 1Gbps in full duplex mode.

Connections to the Gigabit Ethernet ports are made using a fiber-optic cable or Category 5e copper cable, depending on the type of port. A valid connection is indicated when the Link LED is lit.

Figure 11: Connecting the Switch to a Server



CHAPTER 4 Introduction to Switch Management

Management Options

This system may be managed out-of-band through the console port on the front panel or in-band using Telnet. The user may also choose the Web-based management, accessible through a Web browser.

Web-Based Management Interface

After successfully installing the switch, the user can configure the switch, monitor the LED panel, and display statistics graphically using a Web browser, such as Microsoft® Internet Explorer (version 5.5 and later), Netscape (version 8 and later), Mozilla Firefox (version 2.0 and later), Safari (version 4.0 and later), and Google Chrome (version 6.0 and later).

SNMP-Based Management

The switch can be managed with an SNMP-compatible console program. The switch supports SNMP version 1.0, version 2.0 and version 3.0. The SNMP agent decodes the incoming SNMP messages and responds to requests with MIB objects stored in the database. The SNMP agent updates the MIB objects to generate statistics and counters.

Command Line Interface Through the Serial Port or Remote Telnet

The user can also connect a computer or terminal to the serial console port to access the switch. The command line interface provides complete access to all switch management features.

Connecting the Console Port

The front panel of the switch provides a port that enables a connection to a computer monitoring and configuring the switch. The console port is an RJ-45 port and requires a special cable that is included with the switch, to establish the physical connection.

To use the console port, the following equipment is needed:

- A terminal or a computer with both an RS-232 serial port and the ability to emulate a terminal.
- A console cable with a male DB-9 connector on one end and an RJ-45 connection on the other. This cable should be included with the switch. It establishes the physical connection to the console port.

To connect a terminal to the console port:

Connect the male DB-9 connector on the console cable (shipped with the switch) to the RS-232 serial port on the computer running terminal emulation software then insert the RJ-45 connector into the RJ-45 console port on the front of the switch. Set the terminal emulation software as follows:

- Select the appropriate serial port (COM port 1 or COM port 2).
- Set the data rate to 9600 baud.
- Set the data format to 8 data bits, 1 stop bit, and no parity.
- Set flow control to None.
- Under Properties, select VT100 for Emulation mode.
- Select Terminal keys for Function, Arrow and Ctrl keys. Make sure to use Terminal keys (not Windows keys) are selected.

NOTE

When using HyperTerminal with the Microsoft® Windows® 2000 operating system, ensure that Windows 2000 Service Pack 2 or later is installed. Windows 2000 Service Pack 2 allows use of arrow keys in HyperTerminal's VT100 emulation. See www.microsoft.com for information on Windows 2000 service packs.

- After you have correctly set up the terminal, plug the power cable into the power receptacle on the back of the switch. The boot sequence appears in the terminal.
- After the boot sequence completes, the console login screen displays.
- If the user has not logged into the command line interface (CLI) program, press the Enter key at the User name and password prompts. There is no default user name and password for the switch. The administrator must first create user names and passwords. If user accounts have been previously set up, log in and continue to configure the switch.
- Enter the commands to complete desired tasks. Many commands require administrator-level access privileges. Read the next section for more information on setting up user accounts. See the *EAS 200-24p CLI Manual* for a list of all commands and additional information on using the CLI.
- To end a management session, use the logout command or close the emulator program.

If problems occur in making this connection on a PC, make sure the emulation is set to VT-100. The emulation settings can be configured by clicking on the File menu in the HyperTerminal window by clicking on Properties in the drop-down menu, and then clicking the Settings tab. This is where you will find the Emulation options. If you still do not see anything, try rebooting the switch by disconnecting its power supply.

Once connected to the console, the screen on the next page will appear on the console. This is where the user will enter commands to perform all the available management functions. The switch will prompt the user to enter a user name and a password. Upon the initial connection, there is no user name or password and therefore just press Enter twice to access the command line interface.

Figure 12: Boot up display in console screen

```
  Boot Procedure                                          V1.00.001
-------------------------------------------------------------------------------

  Power On Self Test ....................................  100 %

  MAC Address    : 00-04-96-52-83-83
  H/W Version    : A1

  Please Wait, Loading V1.00.006 Runtime Image ..............  100 %
  UART init .................................................  100 %
  Starting runtime image
  Device Discovery ..........................................  100 %
  Configuration init ........................................  100 %
```

First Time Connecting to the Switch

The switch supports user-based security that can allow prevention of unauthorized users from accessing the switch or changing its settings. This section tells how to log onto the switch via out-of-band console connection or out-of-band Management port connection.

Upon initial connection to the switch, the login screen appears (see example below).

Figure 13: Initial Screen, First Time Connecting to the Switch

```
          EAS 200-24p Gigabit Ethernet Switch
                Command Line Interface

                  Firmware: 1.00.007
  Copyright(C) 2000-2011 Extreme Networks. All rights
                       reserved.

UserName:
```

Enter the Username and Password and press **Enter** for both fields. Then access will be given to enter commands after the command prompt **EAS 200-24p:admin#**

The default username for this switch is **admin**, and there is no password.

NOTE

The first user automatically gets Administrator level privileges. At least one Admin-level user account must be created for the switch.

Password Protection

One of the first tasks when settings up the switch is to create user accounts. Logging in using a predefined administrator-level user name will give the user privileged access to the switch's management software.

After the initial login, define new passwords for both default user names to prevent unauthorized access to the switch, and record the passwords for future reference.

To create an administrator-level account for the switch, do the following:

1. At the CLI login prompt, enter create account admin followed by the <*user name*> and press the **Enter** key.
2. The switch will then prompt the user to provide a password. Type the <*password*> used for the administrator account being created and press the **Enter** key.
3. Once entered, the switch will again ask the user to enter the same password again to verify it. Type the same password and press the **Enter** key.
4. A "Success" response by the switch will verify the creation of the new administrator.

NOTE

Passwords are case sensitive. User names and passwords can be up to 15 characters in length.

IP Address Assignment

An IP address must be assigned to each switch, which is used for communication with an SNMP network manager or other TCP/IP application (for example BOOTP, TFTP). The switch's default IP address is 0.0.0.0. The user may change the default switch IP address to meet the specification of your networking address scheme.

The switch is also assigned a unique MAC address by the factory. This MAC address cannot be changed, and can be found by entering the command **show switch** into the command line interface.

The switch's MAC address also appears in the **Device Information** and **System Information** windows of the Web-based management interface. The IP address for the switch must be set before using the Web-based manager. The switch IP address can be automatically set using BOOTP or DHCP protocols, in which case the actual address assigned to the switch must be known.

SNMP Settings

Simple Network Management Protocol (SNMP) is an OSI Layer 7 (Application Layer) designed specifically for managing and monitoring network devices. SNMP enables network management stations to read and modify the settings of gateways, routers, switches and other network devices. Use SNMP to configure system features for proper operation, monitor performance and detect potential problems in the switch, switch group or network.

Managed devices that support SNMP include software (referred to as an agent), which runs locally on the device. A defined set of variables (managed objects) is maintained by the SNMP agent and used to manage the device. These objects are defined in a Management Information Base (MIB), which provides

a standard presentation of the information controlled by the on-board SNMP agent. SNMP defines both the format of the MIB specifications and the protocol used to access this information over the network.

The switch supports SNMP versions 1, 2c, and 3. The administrator may specify which version of SNMP to use to monitor and control the switch. The three versions of SNMP vary in the level of security provided between the management station and the network device.

In SNMP v1 and v2, user authentication is accomplished using 'community strings', which function like passwords. The remote user SNMP application and the switch SNMP must use the same community string. SNMP packets from any station that has not been authenticated are ignored (dropped).

The default community strings for the switch used for SNMP v1 and v2 management access are:

- public - Allows authorized management stations to retrieve MIB objects.
- private - Allows authorized management stations to retrieve and modify MIB objects.

SNMP v3 uses a more sophisticated authentication process that is separated into two parts. The first part is to maintain a list of users and their attributes that are allowed to act as SNMP managers. The second part describes what each user on that list can do as an SNMP manager.

The switch allows groups of users to be listed and configured with a shared set of privileges. The SNMP version may also be set for a listed group of SNMP managers. Thus, a group of SNMP managers can be created to view read-only information or receive traps using SNMP v1 while assigning a higher level of security to another group, granting read/write privileges using SNMP v3.

Using SNMP v3 individual users or groups of SNMP managers can be allowed to perform or be restricted from performing specific SNMP management functions. The functions allowed or restricted are defined using the Object Identifier (OID) associated with a specific MIB. An additional layer of security is available for SNMP v3 in that SNMP messages may be encrypted.

Traps

Traps are messages that alert network personnel of events that occur on the switch. The events can be as serious as a reboot (someone accidentally turned OFF the switch), or less serious like a port status change. The switch generates traps and sends them to the trap recipient (or network manager). Typical traps include trap messages for Authentication Failure, Topology Change and Broadcast/Multicast Storm.

MIBs

The switch in the Management Information Base (MIB) stores management and counter information. The switch uses the standard MIB-II Management Information Base module. Consequently, values for MIB objects can be retrieved from any SNMP-based network management software. In addition to the standard MIB-II, the switch also supports its own proprietary enterprise MIB as an extended Management Information Base. The proprietary MIB may also be retrieved by specifying the MIB Object Identifier. MIB values can be either read-only or read-write.

5 CHAPTER Web-Based Switch Configuration

Introduction

All software functions of the switch can be managed, configured, and monitored via the embedded Web-based (HTML) interface. Manage the switch from remote stations anywhere on the network through a standard browser, such as Internet Explorer (version 5.5 and later), Netscape (version 8.0 and later), Mozilla Firefox (version 2.0 and later), Safari (version 4.0 and later), or Google Chrome (version 6.0 and later). The browser acts as a universal access tool and can communicate directly with the switch using the HTTP protocol.

The Web-based management module and the Console program (and Telnet) are different ways to access the same internal switching software and configure it. Thus, all settings encountered in web-based management are the same as those found in the console program.

Logging onto the Web Manager

To begin managing the switch, simply run the browser installed on your computer and point it to the IP address you have defined for the device. For this example we'll use the IP address 192.168.69.123/24. The URL in the address bar should read something like: http://192.168.69.123, where the number 123 represent the IP address of the switch.

This opens the management module's user authentication window, as seen below.

Figure 14: Enter Network Password window

Windows Security
The server 192.168.69.123 at Welcome requires a username and password.
Warning: This server is requesting that your username and password be sent in an insecure manner (basic authentication without a secure connection).
admin
Password
Remember my credentials
OK
Cancel

Enter the username and password and click **OK** to proceed. This will open the Web-based user interface. The switch management features available in the Web-based manager are explained below.

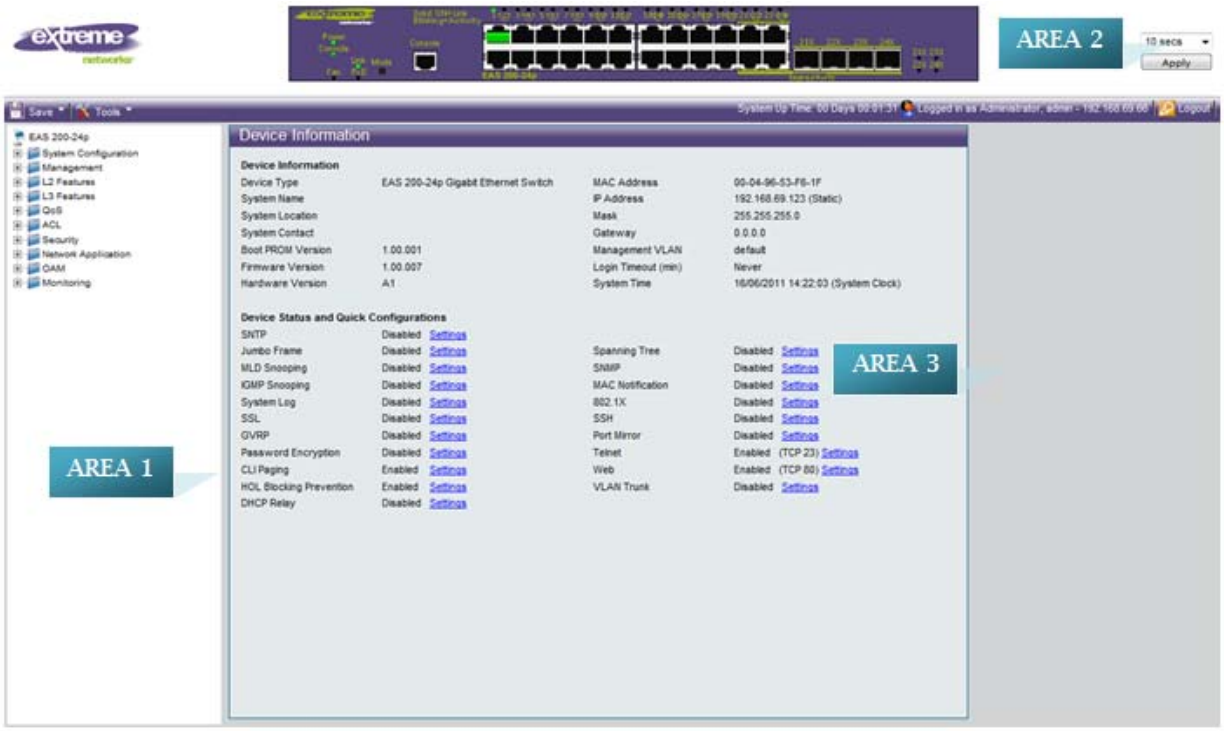
Web-Based User Interface

The user interface provides access to various switch configuration and management windows, allows the user to view performance statistics, and permits graphical monitoring of the system status.

Areas of the User Interface

The figure below shows the user interface. Three distinct areas divide the user interface, as described in the table.

Figure 15: Main Web Manager Window



Area Number	Function
Area 1	Select the menu or window to display. Open folders and click the hyperlinked menu buttons and subfolders contained within them to display menus. Click the Extreme logo to go to the Extreme website.
Area 2	Presents a graphical near real-time image of the front panel of the switch. This area displays the switch's ports, console and management port, showing port activity. Some management functions, including save, reboot, download and upload are accessible here.
Area 3	Presents switch information based on user selection and the entry of configuration data.

Web Pages

When connecting to the management mode of the switch with a web browser, a login screen is displayed. There is no default user name or password necessary to access the switch's management mode.

NOTE

Be sure to configure the user name and password in the User Accounts window before connecting the switch to the greater network.

APPENDIX A

Technical Specifications

General

Feature	Detailed Description	
Standards	IEEE 802.3 10BASE-T Ethernet	
	IEEE 802.3u 100BASE-TX Fast Ethernet	
	IEEE 802.3ab 1000BASE-T Gigabit Ethernet	
	IEEE 802.3z 1000BASE-T (SFP “Mini GBIC”)	
	IEEE 802.1D/2004/Spanning Tree (802.1s, 802.1w)	
	IEEE 802.1Q-2005 VLAN	
	IEEE 802.1p Priority Queues	
	IEEE 802.1X Network Access Control	
	IEEE 802.3 Nway Auto-negotiation	
	IEEE 802.3ad Link Aggregation Control	
	IEEE 802.3x Full-duplex Flow Control	
	IEEE 802.1u Fast Ethernet	
Protocols	CSMA/CD	
Data Transfer Rates:	Half-duplex	Full-duplex
Ethernet	10 Mbps	20Mbps
Fast Ethernet	100Mbps	200Mbps
Gigabit Ethernet	----------	2000Mbps
Network Cables	Cat.5 Enhanced for 1000BASE-T	
	UTP Cat.5, Cat. 5 Enhanced for 100BASE-TX	
	UTP Cat.3, 4, 5 for 10BASE-T	
	EIA/TIA-568 100-ohm screened twisted-pair (STP)(100m)	
Number of Ports	20-Port PoE 10/100/1000Base-T and 4 Combo PoE Copper/SFP ports.	

Physical and Environmental

Feature	Detailed Description
Internal Power Supply	AC Input: 100 – 240 VAC, 50-60 Hz
Power Consumption	467.3 Watts (Max.)
Operating Temperature	0~50°C
Storage Temperature	-40~70°C
Humidity	Operation: 10%-90% RH non-condensing
	Storage: 5% ~ 90% RH non-condensing
Dimensions	440mm (W) x 310mm (D) x 44mm (H)
Weight	5.3kg.
EMI (EMC)	KCC, CCC
Safety Certification Plan	UL, CB, TUV, ANATEL

Performance

Feature	Detailed Description
Transmission Method	Store-and-forward
Packet Buffer	2Mb (Max)
Maximum Forwarding Rate	65.48 million packets per second.
Switching Capability	48Gbps
Priority Queues	8 Priority Queues per port
MAC Address Table	Supports 16K MAC addresses
Wire Speed	Full-wire speed (full-duplex) operation on all ports including Gigabit ports.

LED Indicators

Location	LED Indicative	Color	Status	Description
Per Device	**Power**	Green	Solid Light	Power On
			Light off	Power Off
	Console	Green	Solid Light	Console on
			Light off	Console off
	Fan	Red	Blinking	When any of the fans has failed
			Light off	When all fans work normally
	Port LED Mode Indicator	An LED Mode Select Button to switch between two modes in turn for all 10/100/1000Mbps ports on the switch: • Link/Act/Speed Mode • PoE Mode		
		Green	Solid Light	A LED Mode Select Button to switch Link/Act/Speed Mode
			Solid Light	A LED Mode Select Button to switch PoE Mode
LED Per 10/100/1000 Mbps Port	**Link/Act/ Speed Mode**	Green	Solid Light	When there is a secure connection (or link) to 1000Mbps Ethernet device at any of the ports.
			Blinking	When there is reception or transmission of data occurring at 1000Mbps.
		Orange	Solid Light	When there is a secure connection (or link) to 10/100Mbps Ethernet device at any of the ports.
			Blinking	When there is reception or transmission of data occurring at 10/100Mbps.
		Off	Light off	No link.
	PoE Mode	Green	Solid Light	Power feeding.
		Orange	Solid Light	Error Condition.
		Off	Light Off	No Power feeding.
LED Per SFP Port	**Link/Act**	Green	Solid Light	When there is a secure connection (or link) to 1000Mbps Ethernet device at any of the ports.
			Blinking	When there is reception or transmission of data occurring at 1000Mbps.
		Orange	Solid Light	When there is a secure connection (or link) to 100Mbps Ethernet device at any of the ports.
			Blinking	When there is reception or transmission of data occurring at 100Mbps.
		Off	Light off	No link

Port Functions

Feature	Detailed Description
LAN	24 x 10/100/1000Base-T PoE ports
	Compliant to following standards:
	IEEE 802.3 compliance
	IEEE 802.3u compliance
	IEEE 802.3ab compliance
	Support Half/Full-Duplex operations
	Auto-negotiation
	Auto MDI/MDIX
	IEEE 802.3x Flow Control support for Full-Duplex mode, Back Pressure when Half-Duplex mode, and Head-of-line blocking prevention
Mini-GBIC	4 x SFP ports
	SFP Transceivers Supported:
	• 10051 - SX mini-GBIC (Mini-GBIC SFP, 1000BASE-SX, MMF 220 & 550 meters, LC connector)
	• 10052 - LX mini-GBIC (Mini-GBIC SFP, 1000BASE-LX, MMF 220 & 550 meters, SMF 10km, LC connector)
	• 10053 - ZX mini-GBIC (Mini-GBIC SFP, 1000BASE-ZX, SMF 70km, LC connector)
	• 10056 - 1000BASE-BX-D BiDi SFP (1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength)
	• 10057 - 1000BASE-BX-U BiDi SFP (1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength)
	Compliant to following standards:
	• IEEE 802.3z compliance
	• IEEE 802.3x Flow Control support for Full-Duplex mode.
	• Support Auto-negotiation for Full-Duplex/ flow control operations

Feature	Detailed Description
Combo ports	4x Combo 1000BASE-T/SFP ports **1000Base-T ports compliant to following standards:** • IEEE 802.3 compliance • IEEE 802.3u compliance • IEEE 802.3ab compliance • Support Full-Duplex operations • IEEE 802.3x Flow Control support for Full-Duplex mode, Back Pressure when Half-Duplex mode, and Head-of-line blocking prevention **SFP Transceivers Supported:** • 10051 - SX mini-GBIC (Mini-GBIC SFP, 1000BASE-SX, MMF 220 & 550 meters, LC connector) • 10052 - LX mini-GBIC (Mini-GBIC SFP, 1000BASE-LX, MMF 220 & 550 meters, SMF 10km, LC connector) • 10053 - ZX mini-GBIC (Mini-GBIC SFP, 1000BASE-ZX, SMF 70km, LC connector) • 10056 - 1000BASE-BX-D BiDi SFP (1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength) • 10057 - 1000BASE-BX-U BiDi SFP (1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength) **Compliant to following standards:** • IEEE 802.3z compliance • IEEE 802.3x Flow Control support for Full-Duplex mode. • Support Auto-negotiation for Full-Duplex/ flow control operations

B Cables and Connectors

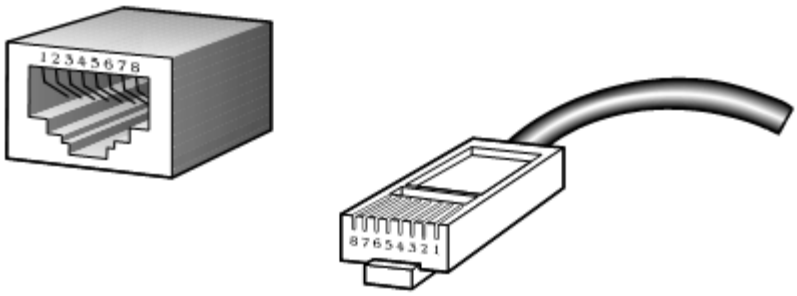
APPENDIX

Ethernet Cable

When connecting the switch to another switch, a bridge or hub, a normal cable is necessary. Please review these products for matching cable pin assignment.

The following diagrams and tables show the standard RJ-45 receptacle/connector and their pin assignments.

Figure 16: The Standard RJ-45 Port and Connector



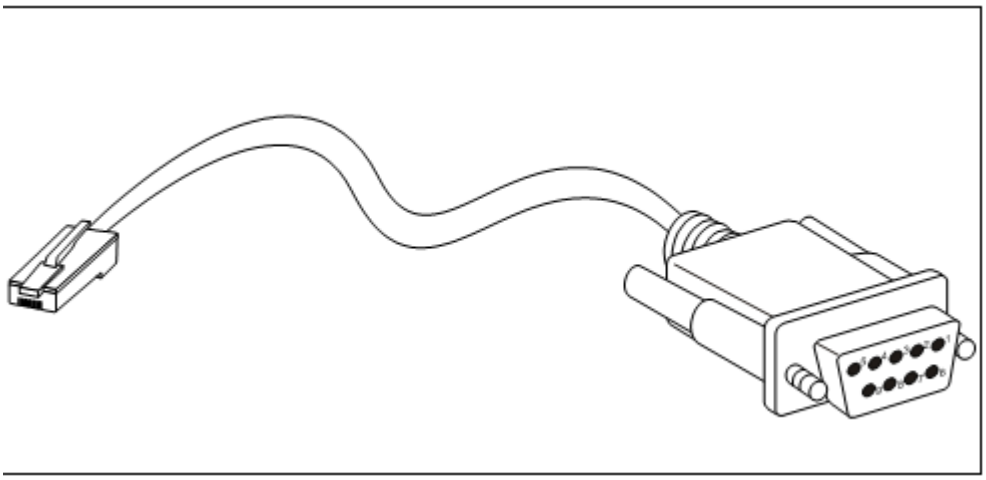
RJ-45 Pin Assignment

Contact	MDI-X Port	MDI-II Port
1	RD+ (receive)	TD+ (transmit)
2	RD- (receive)	TD- (transmit)
3	TD+ (transmit)	RD+ (receive)
4	1000BASE-T	1000BASE-T
5	1000BASE-T	1000BASE-T
6	TD- (transmit)	RD- (receive)
7	1000BASE-T	1000BASE-T
8	1000BASE-T	1000BASE-T

Console Cable

When connecting the switch a PC, a Console cable is necessary. The following diagrams and tables show the standard Console-to-DJ-45 receptacle/connector and their pin assignments.

Figure 17: Console-to-RJ-45 Cable



	Console Pin Assignment	
Pin	**Console (DB9/RS232)**	**RJ-45**
1	Not Used	Not Used
2	RXD	Not Used
3	TXD	TXD
4	Not Used	GND
5	GND (shared)	GND
6	Not Used	RXD
7	Not Used	Not Used
8	Not Used	Not Used